Elsewhere in *Power Where You Need It* we have featured dozens of applications where photovoltaics plays a part—or takes the lead—when it comes to our national infrastructure. Webster defines infrastructure as an "underlying foundation or basic framework." Here, infrastructure is meant to include all the many fundamental, vital ways in which we are inter-connected: Our means of travel (roads, waterways, and railways); our means of power (our electric grid); and our telecommunications systems.

Shown here are examples of other components of a basic national infrastructure: satellites, telephones, cable television, subway transportation, oil and gas pipelines, and water systems.

Photovoltaics has even played a part in our airways: in Antarctica, PV-powered runway lights have been used.

△ A 1997 Mars Pathfinder satellite, one of several NASA explorations of the Red Planet. *[Rendition courtesy National Aeronautics and Space Administration]*

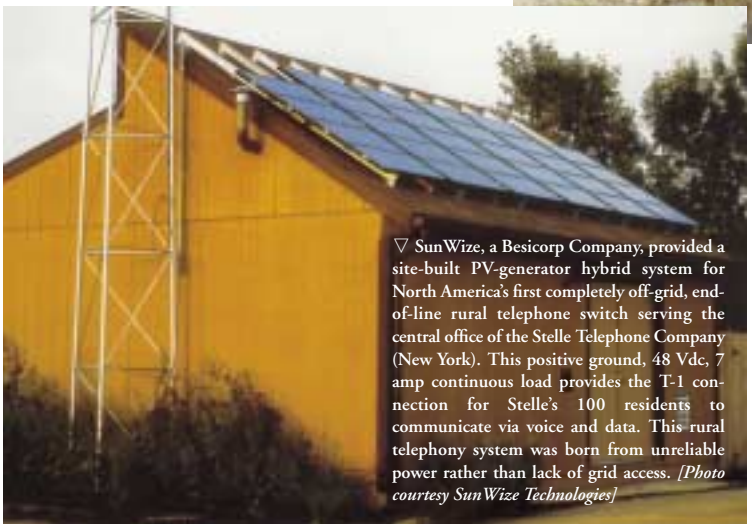
◁ Photovoltaic power for remote applications is a superior use of the technology. Here a Hutton Power Systems 48-watt Sun-Tel cellular data unit powers a water pipe flow monitor in the Houston area. Water utilities throughout the country use similar systems. *[Photo courtesy Hutton Communications]*

△ Washington Metro Subway System makes excellent use of PV to power indicator lights for their trains. Since most of the system's trains are underground, it was difficult for bus drivers to know when trains were approaching. Passenger complaints at missing their connections have greatly diminished, as the bus drivers now see the flash of lights signaling an approaching subway train. The system uses Solarex panels. *[Photos courtesy Atlantic Solar Products]*

▽ On a lonely stretch of beach between two Florida cities, a cable TV operator discovers greatly increased customer service through the use of solar energy. This system is powered by a 900W SEPCO system, which contains 21kWhs of sealed Gel battery storage located at the far side of the array. *[Photo courtesy Solar Electric Power Company – SEPCO]*

▷ An emergency call box is a common use for a small photovoltaics panel. *[Photo courtesy Kyocera, Inc.]*

▽ About 15 miles south of Fairbanks, Alaska, a small PV panel (and a solar thermal panel) prove perfect for one of PV's more diverse applications. An antifreeze solution is pumped through tubing to a culvert, where it keeps the culvert warm enough to thaw the water so it can run under the highway. Otherwise, that same water would run over the highway, creating treacherously icy conditions. This principle could be used to thaw rain gutters and the like. *[Photo courtesy Sandia National Laboratories]*



▽ SunWize, a Besicorp Company, provided a site-built PV-generator hybrid system for North America's first completely off-grid, end-of-line rural telephone switch serving the central office of the Stelle Telephone Company (New York). This positive ground, 48 Vdc, 7 amp continuous load provides the T-1 connection for Stelle's 100 residents to communicate via voice and data. This rural telephony system was born from unreliable power rather than lack of grid access. *[Photo courtesy SunWize Technologies]*

△ A Hutton Communications installation for a natural gas utility provides flow monitoring for oil pipelines and wells in Oklahoma and elsewhere. This type of remote telemetry is an ideal application for photovoltaics. *[Photo courtesy Hutton Communications]*

▷ A Siemens panel provides power for a public telephone where there would otherwise be none. This type of application is an excellent match for PV whether in a foreign country or in the United States. *[Photo courtesy Siemens Solar]*